

## Choi, Sangsook

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**From:** Bill Wagoner <arcola-administrator@consolidated.net>  
**Sent:** Monday, May 18, 2015 12:32 PM  
**To:** Choi, Sangsook  
**Cc:** 'Terrence K. Boyer'  
**Subject:** FW: Revised Libman letter  
**Attachments:** 150518 Libman Pretreatment System-Revised.pdf; \_Certification\_.htm

Please see the note below along with the corrected report.

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**From:** Andrea W. Bretl [mailto:Andrea.Bretl@clarkdietz.com]  
**Sent:** Monday, May 18, 2015 10:45 AM  
**To:** Bill Wagoner (arcola-administrator@consolidated.net)  
**Cc:** Terrence K. Boyer  
**Subject:** Revised Libman letter

Bill:


Terry received and forwarded to me Libman's pre-treatment system permit (attached) this morning. Reading through the permit I find that there are two errors that we made in our May 14<sup>th</sup> letter to you:

1. In figure 1 we used Libman's process flow diagram, which called out a 12,000 g collection pit. This pit is permitted at 1,200 g. I've modified the process flow diagram to reflect the permitted volume.
2. In Tables 1 and 2 we had the maximum day and monthly average cadmium limits as 0.69 and 0.26 mg/l, respectively (per Federal Code). Per Libman's permit these limits are actually 0.11 and 0.07 mg/l. This does not impact our conclusion as their one sample result for cadmium was <0.003 mg/l.

I've revised the letter to reflect these clarifications from the permit. Please let me know if you have any questions.

Thanks,

**Andrea W. Bretl, P.E.**  
Clark Dietz, Inc. - Engineers  
125 West Church Street  
Champaign, IL 61820  
217.373.8933 - office  
217.373.8923 - fax  
[andrea.bretl@clarkdietz.com](mailto:andrea.bretl@clarkdietz.com)  
[www.clarkdietz.com](http://www.clarkdietz.com)

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May 18, 2015

Mr. Bill Wagoner  
City of Arcola  
114 N Locust St  
Arcola, IL 61910

Re: 2015 Libman Pretreatment System  
City of Arcola  
CDI Project No. A0040120

Mr. Wagoner:

Per your request Clark Dietz, Inc. has performed a review of the Libman Broom Co. (Libman) wastewater generation and pre-treatment process. Libman discharges industrial wastewater to the City of Arcola's publically owned wastewater treatment system (POTW) under the Illinois EPA (IEPA) Industrial User Permit No. 2010-EP-0625.

We have reviewed effluent results gathered by Libman and the City to determine whether the pre-treated discharge from the Libman plant is likely to impact the biological treatment system at the Arcola POTW or the POTW's sludge. As part of this analysis, we also reviewed federal regulatory pre-treatment requirements.

As discussed below, we have concluded that the hydraulic and mass loading to the POTW from Libman are insignificant and unlikely to cause any current or future issues for water quality or sludge quality.

### **Libman Wastewater Generation and Treatment**

According to their permit modification/renewal application, dated March 2015, Libman discharges an average of 0.000641 mgd (641 gallons per day) and a maximum of 0.00835 mgd (8350 gallons per day) of pre-treated wastewater to Arcola's POTW. In that same permit renewal application, Libman requested that their industrial user permit be modified to remove the categorical metal finishing status and eliminate or reduce sampling requirements as the phosphate wash process was removed as of January 2014 and replaced by a new chemical process that does not utilize phosphate.

According to a process flow diagram provided to Clark Dietz by Libman, industrial wastewater is generated from two sources: waste lubricant and wastewater from a tube wash and rinse tanks prior to coating; this is shown schematically in Figure 1. Using the process flow diagram and the Material Safety Data Sheets (MSDS) included in the industrial user permit modification/renewal application it is inferred that the chemical additive to the wash tanks is from Calvary Industries:

ADVANTECH C610A. This chemical is 1-5% Fluorozirconic Acid. Using the same process flow diagram and MSDS sheets, it is assumed that the lubricant is also from Calvary Industries and is called CAL COOL 2259, which has 15-30% mineral oil and 5-10% triethanolamine. Wastewaters from both locations are collected in a 12,000 gallon pit for holding prior to treatment.

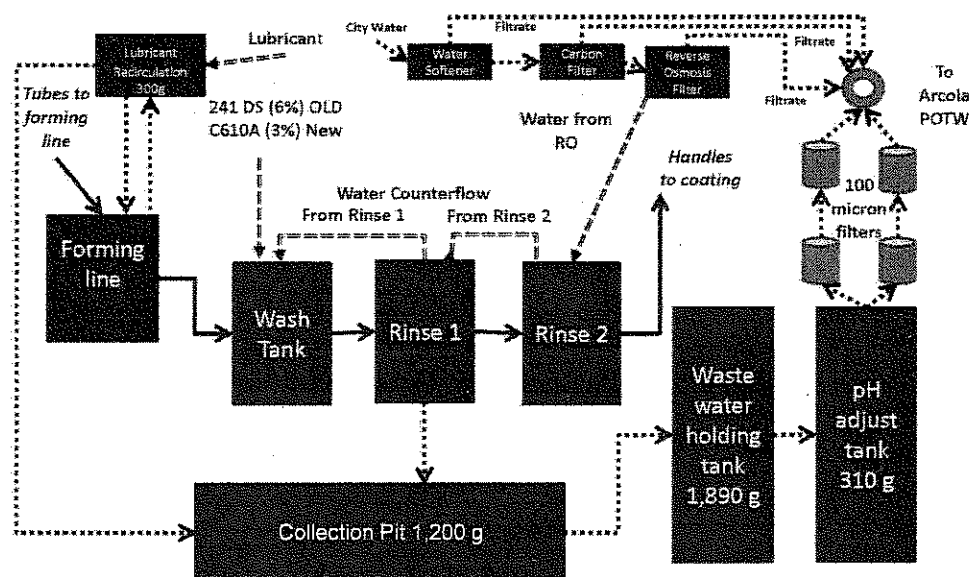


Figure 1 - Libman Wastewater Process Flow Diagram

The wastewater from these sources is neutralized in a pH adjustment tank and then filtered with a 100 micron filter prior to discharge.

Filtrate from a water softener, carbon filter, and RO filter is also discharged to the POTW.

During Clark Dietz's site visit at Libman, it was observed that a plastics molding process also uses a water bath for cooling or finishing. It is unclear where this water is discharged and whether it is treated prior to discharge.

## Regulatory Context

### *Determination of Libman as a Significant Industrial User*

The Clean Water Act establishes pretreatment standards for industry to control pollutants which pass through publicly owned treatment works (POTWs) and may interfere with treatment or contaminate sewage sludge (40 CFR 403.1). An industry is a Significant Industrial User (SIU) if they are subject to a Categorical Pretreatment Standard or discharge more than an average of 25,000 gallons per day. Though Libman has a lower flow than would make them an SIU, they are subject to a Categorical Pretreatment Standards due to the metal finishing and plastic molding and forming activities performed there (40 CFR 403.3). This determination is made by the EPA.

*Requirements for POTWs to have Pre-Treatment Programs*

POTWs with flows greater than 5 mgd and receiving from SIUs that may interfere with the operation of the POTW need a pre-treatment program. Arcola does not have such a program as their flow rate is below the minimum. However, the EPA may require the POTW to develop a pre-treatment program if they find that the nature or volume of industrial influent, treatment process upsets, or violations of the POTW effluent limits warrant a program (40 CFR 403.8). As described below in the Conclusion, we do not feel that the flow rate from Libman or the performance of Arcola's POTW warrants Arcola's development of a pre-treatment program.

*Metal Finishing Point Source Category*

The Metal Finishing Point Source Category (40 CFR 433.10) covers industries which perform one or more of the following six operations: electroplating, electroless plating, anodizing, coating, chemical etching and milling, or printed circuit board manufacturer. If any one of those six operations are present, this category then also applies to several different types of painting operations. It is our understanding that the coating and painting operations at Libman subject them to this category.

The pretreatment standards for existing and new sources discharging into a publically owned treatment works must comply with the pretreatment standards listed in Table 1. It is assumed that Libman falls under the Existing Source category since operations in Arcola began in 1957.

Table 1 - Pretreatment Standards (§433.15)

Pollutant	Existing Source (pre-1983)	
	Maximum day, mg/l	Monthly average, mg/l
Cadmium (T)	0.11	0.07
Chromium (T)	2.77	1.71
Copper (T)	3.38	2.07
Lead (T)	0.69	0.43
Nickel (T)	3.98	2.38
Silver (T)	0.43	0.24
Zinc (T)	2.61	1.48
Cyanide (T)	1.20	0.65
TTO <sup>1</sup>	2.13	None
Oil and Grease	None	None
TSS	None	None
pH	None	None

Note:

1. TTO means total toxic organics and is the sum of all quantifiable values greater than 0.01 mg/l of a list of more than 100 chemicals. The regulation of this category has a maximum day value, but not a monthly average.

*Plastics Molding and Forming Point Source Category*

There is also a Plastics Molding and Forming Point Source Category (40 CFR 463), which covers plastic molding and forming processes including those that blend, mold, form or otherwise process plastic materials into intermediate or final plastic products. This also covers plastic material coated onto a metal substrate (40 CFR 463.1). There are pre-treatment standards for contact cooling and heating water, cleaning water, and finishing water.

The pretreatment standards for existing and new sources discharging into a publically owned treatment works must comply with the pretreatment standards for this category, which are divided into the three subparts listed above. How the Libman process is categorized and the parameters they are required to sample for should be included in their industrial user permit.

**Effluent Results**

Though sampling results are required semi-annually, wastewater quality analytical results from Libman were available to Clark Dietz from two sources: a sample included in the Libman March 2015 industrial user permit modification/renewal application that was assessed for a variety of parameters including those in Table 1 and three additional samples collected by the City for parameters directly affecting the City's NPDES effluent permit.

Table 2 – Water Quality Results

Pollutant	Existing Source (pre 1983)		2/2/15 Sample, mg/l
	Daily Maximum, mg/l	Monthly Average, mg/l	
Cadmium (T)	0.11	0.07	<0.003
Chromium (T)	2.77	1.71	0.015
Copper (T)	3.38	2.07	0.332
Lead (T)	0.69	0.43	0.0157
Nickel (T)	3.98	2.38	0.0645
Silver (T)	0.43	0.24	<0.010
Zinc (T)	2.61	1.48	1.84
Cyanide (T)	1.20	0.65	<0.010
TTO <sup>1</sup>	2.13	None	0.138
Oil and Grease	None	None	Not sampled
TSS <sup>2</sup>	None	None	34
pH <sup>3</sup>	None	None	5.5 to 8.8
BOD <sup>4</sup>	None	None	200
TKN <sup>4</sup>	None	None	20
Ammonia <sup>4</sup>	None	None	2.3
Total Phosphorous <sup>4</sup>	None	None	1.8

Notes:

1. TTO means total toxic organics and is the sum of all quantifiable values greater than 0.01 mg/l of a list of more than 100 chemicals.
2. TSS samples from two wastewater samples collected and analyzed by the City of Arcola. One sample was <4.0 the other was 34 mg/l.
3. pH samples from Libman as well as samples collected and analyzed by the City of Arcola.
4. Additional sampling done by the City for other common wastewater parameters. The sample size was 2-3 samples. All samples were taken in April 2015. The highest recorded value is shown in the table.

## Conclusions

### *Hydraulic, BOD, and Ammonia Impacts to the POTW*

Based on data available to Clark Dietz from the Arcola POTW from 2009 through 2013, the average daily flow is 0.48 mgd. The average daily flow in the minimum flow month was 0.15 mgd. Therefore, assuming that the Libman flow, discussed on page 1 of this letter, has been constant during that time period, the average contribution of their wastewater is 0.1% of the average influent flow to the POTW.

The worst case scenario of loading from Libman, would be if the Libman maximum flow day occurs during the POTW's minimum flow month. In this scenario, the Libman contribution would be 5.6% of the influent of the POTW. Therefore the average contribution of Libman to the POTW flow is insignificant. The worst case scenario of Libman's influent to the overall influent is still relatively small and unlikely to impact the POTW's performance in any way.

The insignificance of the hydraulic contribution of Libman flow to the POTW is further highlighted by the insignificance of the BOD, TSS, and ammonia load from Libman. As shown in Table 2, the concentrations of the parameters that the wastewater treatment plant is concerned with: BOD, ammonia, and TSS, are well within or below standard values of domestic wastewater.

### *Sludge Impacts to the POTW*

The City does not remove sludge from their POTW lagoons, instead sludge is accumulating within the lagoons. Based on previous studies that Clark Dietz has done with the City, it is likely that sludge can keep accumulating in the existing lagoons for at least 10 to 20 years before dredging is required to remove accumulated material.

The metals that are being discharged by the Libman factory are likely accumulating in the sludge. Per Table 2, zinc is the metal with the highest concentration. The given the average daily flow rate from Libman of 0.000641 mgd, there are approximately 0.0098 pounds per day of zinc entering the POTW. The POTW's influent TSS is 144 mg/l. At the average daily flow rate of 0.48 mgd, the influent solids mass is 576 pounds per day. Therefore, zinc is approximately 0.0017% of the influent solids loading. Therefore, while it is possible that zinc concentrations may limit future disposal options that the City has for dredged wastewater solids, given the small amount of zinc per influent load, the likelihood is probably small.

Mr. Bill Wagoner  
May 18, 2015  
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*Libman's Categorical Status*

Wastewater effluent Libman is regulated as it comes from a categorical user. As discussed above, Libman has requested in their current industrial user permit modification/renewal application that their Metal Finishing Point Source Category be removed or sampling requirements be limited. Though the City should not expect significant loads of the pollutants of concern from Libman, having the periodic data available regarding these parameters will provide the City with some degree of confidence that no future problems should be expected.

If you have any questions about this analysis, please call either myself at 217-373-8938 or Andrea Bretl at 217-373-8933.

Sincerely,

Clark Dietz, Inc.

A handwritten signature in black ink, appearing to read "T. K. Boyer". The signature is fluid and cursive, with a long horizontal line extending from the end.

Terrence K. Boyer, P.E.  
Vice President

E-mail Address: [Terrence.boyer@clarkdietz.com](mailto:Terrence.boyer@clarkdietz.com)